REMARKS/ARGUMENTS

Claims 11-14 and 17-22 have been finally rejected over Shekel, Hartman and Thompson, in view of JP 2001-189297. Claims 17-19 were rejected over the foregoing references, and further in view of Schnegg. Reconsideration is requested.

Independent claims 11 and 21 each recite a formula from which a computing device derives a corrected treating time. Thus, the computing device of claims 11 and 21 derives a corrected (extended) treating time A1 from the formula Ti•(Ri/Rm), where Ti is a basic treating time specified in a recipe with reference to a fresh treating liquid; Ri is a treating rate of the fresh treating liquid; and Rm is a current treating rate, that is, the slower treating rate of a treating liquid that is no longer fresh.

The term "treating" time or rate can refer to either etching or cleaning (see page 4, lines 20-21). In independent claims 11 and 21, this term is used broadly; while dependent claims 14 and 22 specify that in those claims the "treating" corresponds to etching.

As explained in the previous response, the technical concept of the claimed present invention is neither disclosed nor even suggested by Shekel.

Shekel et al. stores a history of use time of a treating liquid, but sets an etching rate by adjusting the concentration of the treating liquid. Shekel et al. does not disclose or suggest the idea of setting an extended treating time A1, derived from equation A1= Ti•(Ri/Rm), where Ti is a treating time specified in a recipe with reference to a fresh portion of the treating liquid; Rm is a current treating rate; and Ri is a treating rate of the fresh portion. Thus, there is a clear difference in construction between the claimed invention and Shekel et al.

The Examiner acknowledged that Shekel does not disclose determining an extended treating time, and yet asserted, without evidence, that this would have been obvious to one with ordinary skill in the art.

However, though it is clear that a treating liquid will deteriorate through use, it is not obvious even to one with ordinary skill in the art to modify the treatment by extending the treating time.

On the contrary, the common sense in the substrate processing art, as disclosed in Shekel, is to provide a fixed time for treating substrates so that a predictable number of substrates can be

treated in one day or within a certain length of time. In order to use this common sense technique, Shekel modifies a treatment not by extending the treatment time, but by adjusting the concentration of the treating liquid having deteriorated.

On the other hand, when the treating time is extended as claimed, the number of substrates that can be treated in unit time decreases. Although this approach may seem contrary to common sense, the present inventors realized that it would provide a technical advantage. Adjusting the concentration of treating liquid requires delicate control, and a very long time is required for the concentration to reach a target concentration. By contrast, extending the treating time can be controlled very easily. This is achieved simply by a computing device deriving a corrected treating time A1 from the formula Ti·(Ri/Rm), where Rm is a current treating rate, Ti is a treating time specified in a recipe with reference to a fresh treating liquid, and Ri is a treating rate of the fresh portion of treating liquid, and treatment is carried out only for the corrected treating time A1.

Thus, the claimed invention, which uses a technique contrary to the common sense in semiconductor processing, of extending the treating time to provide improved treatment, is based on a new technical concept, which cannot be said to be obvious even to one with ordinary skill in the art, and even based on Shekel.

Prior art references require evidence, such a printed publications or an affidavit of the Examiner. 37 C.F.R. § 1.104(d)(2). Graham v. John Deere, 383 U.S. 1,17 (1966).

Even where, as here, a rejection is based on the level of skill in the art, evidence is required to establish that level of skill. In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1998); In re Kaplan, 229 USPQ 678, 683 (Fed. Cir. 1986).

Here, the only conception of extending a treatment time, contrary to the conventional wisdom providing a fixed treatment time, was by the present inventors. The Examiner has found that concept obvious, based only on his hindsight recognition that it is a good idea, not based on anything in any prior art reference.

Since there is no factual basis but the Examiner's own hindsight for this rejection, allowance of claims 11-14 and 17-22 is requested.

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JAF:lf/rkw

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